Minute Order Form (06/97)

United States District Court, Northern District of Illinois

Name of Assigned Judge or Magistrate Judge	Suzanne B. Conlon	Sitting Judge if Other than Assigned Judge	
CASE NUMBER	01 C 6934	DATE	7/31/2002
CASE TITLE	LIQUID DYNAMICS CORP. vs. VAUGHAN CO.		

[In the following box (a) indicate the party filing the motion, e.g., plaintiff, defendant, 3rd party plaintiff, and (b) state briefly the nature of the motion being presented.]

MOTION:

DOCKET ENTRY:

(1) ☐ Filed motion of [use listing in "Motion" box above.]

(2) ☐ Brief in support of motion due _____.

(3) ☐ Answer brief to motion due_____. Reply to answer brief due_____.

(4) ☐ Ruling/Hearing on _____ set for _____ at _____.

(5) ☐ Status hearing[held/continued to] [set for/re-set for] on _____ set for _____ at _____.

(6) ☐ Pretrial conference[held/continued to] [set for/re-set for] on _____ set for _____ at _____.

(7) ☐ Trial[set for/re-set for] on _____ at _____.

(8) ☐ [Bench/Jury trial] [Hearing] held/continued to _____ at _____.

(9) ☐ This case is dismissed [with/without] prejudice and without costs[by/agreement/pursuant to]
☐ FRCP4(m) ☐ General Rule 21 ☐ FRCP41(a)(1) ☐ FRCP41(a)(2).

(10) ■ [Other docket entry] Vaughan's motion for interpretation of patent claim terms [45-1] is granted in part. Vaughan's motion for summary judgment on non-infringement [47-1] is granted. Vaughan has not infringed Liquid Dynamics' U.S. Patent No. 5,458,414. The motions for summary judgment on invalidity [52-1] and inequitable conduct [46-1] are moot. ENTER MEMORANDUM OPINION AND ORDER.

Suzanne B. Conlon

(11) ■ [For further detail see order attached to the original minute order.]

	No notices required, advised in open court.		number of notices
	No notices required.		
✓	Notices mailed by judge's staff.		AUG 01 2002 date docketed
	Notified counsel by telephone.		
	Docketing to mail notices.		docketing deputy initials
✓	Mail AO 450 form.		7/30/2002 date mailed notice
	Copy to judge/magistrate judge.		
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Document Number: 88

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

LIQUID DYNAMICS CORP.,	)	
	)	
Plaintiff,	)	No. 01 C 6934
	)	
v.	)	Suzanne B. Conlon, Judge
	)	
VAUGHAN CO.,	)	
	)	
Defendant.	)	

MEMORANDUM OPINION AND ORDER

Liquid Dynamics Corp. ("Liquid Dynamics") sues Vaughan Co., Inc. ("Vaughan") for infringement of U.S. Patent No. 5, 458, 414 ("the '414 patent") under 35 U.S.C. § 271 *et seq.* Vaughan counterclaims for invalidity and inequitable conduct. Vaughan moves for summary judgment on grounds of non-infringement, invalidity, and inequitable conduct.

BACKGROUND

All facts are undisputed unless otherwise noted. Vaughan sells components of digester mixing systems. These systems are used to agitate a tank's contents to resuspend solids in order to combine the solids and liquids into a slurry that can be pumped out of the tank or further processed. Liquid Dynamics is the owner of all rights, interest, and title in the '414 patent, entitled "Method and Apparatus for Handling Waste Water Slurries." James M. Crump and Bruce K. Doyle are the '414 patent's inventors. The '414 patent was developed to effectively remove solids from large sludge tanks after long periods of storage. Specifically, the patent was designed to mix a tank's contents in a relatively short period of time to form a homogenous

88

slurry. The '414 patent consists of 11 claims. Claims 1 and 8 are independent claims; claims 2 through 7 and 9 through 11 are dependent claims. Claims 1 and 8 describe the flow path of a liquid or solid particle when the tank is agitated to resuspend solids. Liquid Dynamics asserts Vaughan makes, uses, and offers for sale 47 different systems that infringe the '414 patent.

DISCUSSION

I. Summary judgment standard

Summary judgment is proper when the moving papers and affidavits show there is no genuine issue of material fact and the movant is entitled to judgment as a matter of law. Fed. R. Civ. P. 56(c); *Celotex Corp. v. Catrett*, 477 U.S. 317, 322 (1986); *King v. National Human Res. Comm.*, 218 F.3d 719, 723 (7th Cir. 2000). Once a moving party has met its burden, the non-movant must go beyond the pleadings and set forth specific facts showing there is a genuine issue for trial. Fed. R. Civ. P. 56(e); *Silk v. City of Chicago*, 194 F.3d 788, 798 (7th Cir. 1999). The court considers the record as a whole and draws all reasonable inferences in the light most favorable to the nonmoving party. *Bay v. Cassens Transp., Co.*, 212 F.3d 969, 972 (7th Cir. 2000). A genuine issue of material fact exists when the evidence is sufficient to support a reasonable jury verdict in favor of the nonmoving party. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986); *Insolia v. Philip Morris, Inc.*, 216 F.3d 596, 599 (7th Cir. 2000). If the moving party meets this burden, the nonmovant must then respond by setting forth specific facts that demonstrate the existence of a genuine issue for trial. Fed. R. Civ. P. 56(e). "Summary judgment is as appropriate in a patent case as in any other." *Avia Group Int'l., Inc. v. L.A. Gear California, Inc.*, 853 F.2d 1557, 1561 (Fed. Cir. 1988) (internal citations omitted).

II. Applicable law

To establish patent infringement, a plaintiff must prove "the presence of every element [of a claim] or its substantial equivalent in the accused device" by a preponderance of the evidence. *Zygo Corporation v. Wyko Corporation*, 79 F.3d 1563, 1568 (Fed. Cir. 1996). Infringement analysis is a two-step process. "First, the claim must be properly construed to determine its scope and meaning. Second, the claim as properly construed must be compared to the accused device or process." *Ekchian v. Home Depot, Inc.*, 104 F.3d 1299, 1302 (Fed. Cir. 1997). Claim construction is a matter of law. *Id.* Courts examine the patent's plain language, specification, and prosecution history when construing claims. *Id.* Extrinsic evidence is examined when the patent and prosecution history do not provide a clear answer. *Id.* The accused device is not considered when determining the scope of the claims. *Young Dental Manufacturing Company, Inc., v. Q3 Special Products, Inc.*, 112 F.3d 1137, 1141 (Fed. Cir. 1997).

After the claim is properly construed, the trier of fact must apply the claim to the accused device to determine whether infringement occurred. *Ekchian*, 104 F.3d at 1302. "Literal infringement is found where the accused device falls within the scope of the asserted claims as properly interpreted." *Lantech, Inc. v. Keip Machine Co.*, 32 F.3d 542, 547 (Fed. Cir. 1994). To establish literal infringement, every patent limitation must be present in the accused device. *General Mills, Inc. v. Hunt-Wesson, Inc.*, 103 F.3d 978, 981 (Fed. Cir. 1997). Summary judgment based on a finding of non-infringement is appropriate when no reasonable jury could conclude the patent is infringed. *Karlin Tech. Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968, 974-75 (Fed. Cir. 1999).

III. Claim Construction

In determining the proper construction of a claim, "the court should look first to the intrinsic evidence of record, i.e. the patent itself, including the claims, the specification, and if in evidence, the prosecution history." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1581 (Fed. Cir. 1996). The court must begin with the plain language of the claims. *York Prods., Inc. v. Central Tractor Farm & Family Ctr.*, 99 F.3d 1568, 1572 (Fed. Cir. 1996). Claim terms must be given their ordinary and accustomed meaning. *Johnson Worldwide Assocs., Inc. v. Zebco Corp.*, 175 F.3d 985, 989 (Fed. Cir. 1999). Next, the court examines the patent specification. The specification contains a written description of the invention that should be clear and complete to enable a person of ordinary skill in the art to make and use the invention. *Vitronics*, 90 F.3d at 1582. The specification is "always highly relevant to the claim construction analysis" and "is usually dispositive; it is the single best guide to the meaning of a disputed term." *Id.*

The parties dispute the construction of Claim 1.[1] Claim 1 provides, in relevant part:

> [1] said first and second flow generating means being directed at an angle to the radius to generate flows with tangential components of flow to impart a rotational movement of the entire body of liquid and solid components; each of said first and second flow generating means being pointed toward the outer surrounding wall for generating
>
> [2] a substantial helical flow path of the liquid and solid components therein
>
> [3] with the liquid and solid components traveling outwardly, across the tank floor from the center portion of the tank toward the tank wall and then upwardly along the tank outer surrounding wall to a first point and then inwardly along an upper portion of the body toward the center of the tank and then downwardly toward the tank floor, and then outwardly to a second point spaced

[1] Claim 8 contains identical disputed claim language. Dependent claims 9 through 11 incorporate independent claim 8.

circumferentially in the direction of rotation of the entire body of liquid, the liquid and solid components continuing to travel in the helical path as the entire body of liquid and solid components continues to rotate;

[4] said flow generating means creating a substantially volume filling flow of at least one of the slurry components within said storage tank which mixes the liquid and solid slurry components to form a substantially homogenous slurry suitable for unloading from said storage tank using liquid handling devices.

Def. 56.1 Facts, Ex. A, Col. 8-9.[2]

A. Phrases 2 and 3

The parties dispute the proper interpretation of the substantial helical flow path described in phrases 2 and 3. Vaughan asserts a helical flow path consists of the bottom segment of the path extending essentially radially from the center of the tank to the peripheral wall, with the bottom segment being immediately adjacent to the floor of the tank; an outer segment extending essentially vertically upward along the outer wall; an upper segment extending essentially radially along the upper portion of the body of slurry in the tank from the outer wall to the center of the tank; and an inner segment extending essentially vertically downward at the center; all segments no more than a negligible radial distance from the center.

Liquid Dynamics advances a broader definition of substantial helical flow: a largely or generally spiral-like flow path; a perfect helical path is not required; components of the slurry follow a path generally looping away from the center portion of the tank toward the tank's wall, upwardly toward the upper portion of the tank, then toward the center portion, and then downwardly.

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[2] The court divides the relevant parts of claim 1 into four separate phrases. The parties dispute the proper construction of each of these phrases.

Proper claim interpretation requires examination of the claim language, the patent specification, and the prosecution history. *CCS Fitness, Inc v. Brunswick, Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002); *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995). Application of these modes of claim interpretation establishes that Vaughan's proposed construction of phrases 2 and 3 is proper. First, the claim's plain language describes a flow path that emanates from the tank center and returns to the center after one rotation. Mot. Claim Constr., Ex. A. Col. 9, ll. 15-25. An ordinary reading of claim 1 requires a flow path that moves outwardly across the tank floor, upwardly along the tank wall, and inwardly across the top portion of the tank before returning to the tank center. *Id.* The plain language of claim 1 include the terms "across" and "along" to describe a flow path that is not merely a random loop, but rather a flow pattern that progresses adjacent to the tank floor and walls. *Id.*

The patent specification further supports Vaughan's construction of phrases 2 and 3. Although it is improper to read limitations from the specification into a claim, claims must be interpreted in light of the patent specification. *See Markman*, 52 F.3d at 979. A written description of the preferred embodiments "can provide guidance as to the meaning of the claims, thereby dictating the manner in which the claims are to be construed, even if the guidance is not provided in explicit definitional format." *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys.*, Inc., 242 F.3d 1337, 1344 (Fed. Cir. 2001); *Toro Co. v. White Consol. Indus. Inc.*, 199 F.3d 1295, 1301 (Fed. Cir. 1999).

In *SciMed*, the court affirmed the district court's claim construction because the specification limited the patents to particular lumen catheters, and the patents distinguished prior art based on the catheters. 242 F.3d at 1343. In *Wang Laboratories, Inc. v. America Online, Inc.*,

197 F.3d 1377, 1381-84 (Fed. Cir. 1999), the court determined the claim term "frame" was necessarily limited to a character-based protocol because the patent specification described only one embodiment of the claim. *Id.* at 1382. The court sought to interpret the claims to preserve, rather than defeat, their validity. *Id.* at 1383.

SciMed and *Wang* are instructive. The text and figures contained in the '414 patent specification provide a single example of substantial helical flow. The specification notes: "flow is directed along the outside wall 12 of the storage tank 10; across the surface of the slurry components in the storage tank 10, and downwardly along the tank center C. The flow then sweeps across the tank floor 14, especially at the point where the vertical line C intersects the tank floor." Mot. for Claim Constr., Ex. A, Col. 5, ll. 50-60. This description of the flow pattern supports Vaughan's claim construction because it describes a flow path that travels along the floor and walls of the tank and that returns to the tank center. Figures 5 and 6 of the specification illustrate the requisite helical flow pattern that bolsters Vaughan's claim construction. *See Modine Mfg. Co. v. United States Int'l Trade Comm'n*, 75 F.3d 1545, 1551 (Fed. Cir. 1996) ("[W]hen the preferred embodiment is described in the specification as the invention itself, the claims are not necessarily entitled to a scope broader than that embodiment"). The patent specification explains that Figure 6 illustrates "the flow components 14a traveling across the tank floor, and flow components 12a sweeping along the tank wall, and returning downwardly at the center C of the storage tank 10." Mot. for Claim Constr., Ex. A, Col. 5, l. 65; *O.I. Corp. v. Tekmark Co.*, 115 F.3d 1576, 1581-83 (Fed. Cir. 1997) (limiting a claim term when the specification described only one claim construction). In discussing Figures 5 and 6, the patent specification provides that the "present invention" utilizes a flow pattern that sweeps along the

floor and walls of the tank and then downwardly along the tank center. Mot. for Claim Constr., Ex. A, Col. 5, ll. 50-60; *see SciMed,* 242 F.3d at 1342-44 (use of the term *present invention* in the specification lends support to a claim construction that is consistent with the specification's description); *see also* Ex. A, Col. 5, ll. 60-65 ("flow produced according to the principles of the *present invention* is believed to be substantially helical, sweeping out an annular volume having a negligible central radius and an outer radius corresponding to that of the tank wall 12, as illustrated in Figure 6") (emphasis added).

Liquid Dynamics argues the '414 patent specification allows various flow patterns. Specifically, Liquid Dynamics contends Figures 5 and 6 in the patent specification illustrate different flow patterns. The '414 patent specification does not support that conclusion. Figures 5 and 6 disclose identical flow patterns, consistent with the plain language of claim 1. Figure 5 illustrates the manner in which the flow path interacts with the tank boundaries. Mot. for Claim Constr., Ex. A, Col. 5, ll. 45-65. Figure 6 describes the helical flow lines that is created through the operation of the invention. *Id.* The '414 patent specification does not contain an explanation or description of alternative flow patterns. Liquid Dynamics points to a patent specification that states different flow devices may be used to achieve desired flow patterns. *Id.*, Ex. A, Col. 8, ll. 39-42. That specification relates to the use of permissible flow devices in the invention, not a description of claim 1's helical flow path or alternative flow patterns.

The prosecution history bolsters Vaughan's interpretation of the substantial helical flow pattern. The prosecution history "is often of critical significance in determining the meaning of the claims." *Vitronics*, 90 F.3d at 1582-83; *Alpex Computer Corp. v. Nintendo Co.*, 102 F.3d 1214, 1220 (Fed. Cir. 1996). The original application presented to the Patent and Trademark

Office ("PTO") did not describe claim 1's substantial helical flow path. Mot. for Claim Constr., Ex. C. The PTO rejected the original application based on prior art U.S. Patents Nos. 4,332,484 and 2,552,281. *Id.*, Ex. D. In response, the patentee argued the substantial volume filling flow described in Figures 5 and 6 was possible only with their invention, not the prior art patents. *Id.* The patentee submitted an amendment that substantially narrowed the '414 patent's scope, and expressly outlined the flow pattern currently elaborated in claim 1. *Id.*, Ex. C, VA 000154. Further, the patentee argued the invention operated to:

> impart a helical flow to the liquid and solid components flowing outwardly across the tank floor from the center portion of the tank toward the tank wall, and then upwardly along the tank wall, and then inwardly across the upper portion of the body to the center, and then down toward the floor and outwardly to a second point on the tank wall displaced from the first point in the direction of rotation of the body.

Mot. for Claim Constr, Ex. C, VA 000158. The prosecution history's description of the helical flow path comports with Vaughan's proffered claim construction of the helical flow pattern.

Liquid Dynamics contends the term "substantially" is defined as "largely but not wholly," or "considerable in extent." *See York Products, Inc.*, 99 F.3d at 1572 (quoting Webster's Collegiate Dictionary and American Heritage Dictionary 2nd College Edition). Under that definition, Liquid Dynamics contends a broader construction of claim 1 is warranted, and a perfect helix is not required. Liquid Dynamics is correct that a perfect helix is not required – the ordinary meaning of "substantially" modifies the terms "helical flow" to require a pattern largely or considerably helical in form. Nevertheless, Liquid Dynamics' claim construction is overbroad. Applying Liquid Dynamics' interpretation would eviscerate the ordinary meaning of claim 1 because it would allow a loop of any flow pattern to fall within the '414 patent. Liquid Dynamics contends the '414 patent's flow pattern was designed to counter the "tea-cup effect"–

the stirring of solid and liquid components that results in depositing solid particles on the tank floor. *See* Pl. Resp., Ex. B, at p. 8-9. On that basis, Liquid Dynamics asserts the '414 patent helical flow path must be interpreted broadly. Liquid Dynamics' assertion is without merit. The prosecution history establishes that the '414 patent utilizes a rotational, helical flow pattern whereas the prior art patents do not generate helical flow. *Id.* The prosecution history does not support construing claim 1 to include any flow pattern other than a tea-cup stirring pattern. Indeed, amendment B submitted to the PTO expressly proffers a narrow helical flow pattern. *Id.*, Ex. E at p. 7. Finally, Liquid Dynamics advances the expert opinions of Dr. Richard Lueptow and Dr. Edward Gillette to support its claim construction. The court does not need to consider extrinsic evidence when intrinsic evidence is dispositive of proper claim construction. *Deering Precision Instruments, L.L.C. v. Vector Distribution Sys., Inc.*, No. 01 C 1118, 2001 WL 1035713, at *5 (N.D. Ill. Sept. 4, 2001).

In sum, the plain language, patent specification, and prosecution history conclusively support Vaughan's claim construction of phrases 2 and 3. As a matter of law, the court construes phrases 2 and 3 that describe the substantial helical flow path in the following manner: the bottom segment of the path extending essentially radially from the center of the tank to the peripheral wall, with the bottom segment being immediately adjacent to the floor of the tank; an outer segment extending essentially vertically upward along the outer wall; an upper segment extending essentially radially along the upper portion of the body of slurry in the tank from the outer wall to the center of the tank; and an inner segment extending essentially vertically downward at the center.

B. Phrases 1 and 4

Phrase 4 of claim 1 provides that the helical flow path creates "a substantial volume filing flow of at least one of the slurry components within said storage tank . . . to form a substantially homogenous slurry[.]" Mot. for Claim Constr., Ex. A, Col. 9, ll. 34-39. Vaughan argues phrase 4 requires the helical flow path to exist throughout the entire 360 degree circumference of the tank with closely spaced loops. Liquid Dynamics objects to Vaughan's claim construction. Liquid Dynamics contends the use of the modifier "substantially" suggests the volume filling flow does not need to fill the entire tank, but should only consume most of the tank's volume. Liquid Dynamics further contends the volume filling flow is different from the substantial helical flow such that the helical flow does not need to fill the entire tank's volume.

Liquid Dynamic's analysis is supported by claim 1's plain language. Phrase 4 describes a substantial volume filling flow of slurry components that is the *result* of the substantial helical flow. *Id.* Hence, substantial helical flow cannot logically be equated with substantial volume filling flow. Vaughan does not offer evidence in the patent specification or prosecution history that demonstrates a 360 degree helical flow path is required throughout the tank. Nor does the plain language of phrase 4 require closely spaced loops in the helical path. Vaughan points to Figure 6 in the '414 patent specification for support. The court is not permitted to read specifications into a claim where the plain language provides no support for the desired construction. *Johnson Worldwide*, 175 F.3d at 989-990; *Comark Comm., Inc. v. Harris Corp.*, 156 F.3d 1182, 1186-87 (Fed. Cir. 1998). Phrase 4's plain language is unambiguous, and claim construction is unnecessary.

Similarly, Vaughan construes phrase 1 to require two flow generating means to be pointed toward the outer surrounding wall at an angle of at least 90 degrees to the radius of the center tank; and located within an annular band of approximately 30% to 70% of the tank radius (claim 1) or 25% to 75% (claim 8) of the tank radius. Vaughan's proposed claim construction lacks support in the record. In plain language, phrase 1 allows the flow generating means to be directed at an angle to the radius. The angle is not identified; the specification refers to flow generating means that is "pointed toward the outer surrounding wall" or "directed toward the tank outer surrounding wall." Mot. for Claim Constr., Ex. A, Col. 9, l. 14; Col. 10, l. 27. The patent specification and prosecution history do not reveal a required nozzle orientation by a range of angular degrees. Indeed, the plain language of claim 1 excludes only nozzles that have no angle to the radius. The court is forbidden from arbitrarily reading particular angular ranges into the '414 patent claims. *See SRI Int'l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1122 (Fed. Cir. 1985). Accordingly, phrases 1 and 4 are unambiguous and claim construction is unnecessary. Vaughan's claim construction of phrases 1 and 4 are rejected.[3]

IV. Literal Infringement

To prove literal infringement, the patent holder must establish the accused device contains every limitation in the asserted claims by a preponderance of the evidence. *Kraft Foods, Inc. v. International Trading Co.*, 203 F.3d 1362, 1370 (Fed. Cir. 2000). The absence of even

[3] The remaining '414 patent claims (claims 2 through 7 and 9 through 11) are dependent claims and incorporate features of claims 1 and 8. *See* 25 U.S.C. § 112 ("A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers").

one claim element compels a finding of non-infringement. *Watts v. XL Systems, Inc.*, 232 F.3d 877, 884 (Fed. Cir. 2000).

Vaughan asserts its mixing systems do not infringe the '414 patent because they do not generate substantial helical flow. To illustrate Vaughan systems' flow path, Liquid Dynamics relies on Dr. Richard Lueptow's expert report and declaration. Dr. Lueptow conducted computational flow dynamics ("CFD") analysis that depict pathline plots of flow patterns in the Vaughan systems. *See* Def. 56.1 Facts, Ex. 3A-3H. Dr. Lueptow organized the purportedly infringing Vaughan systems into eight categories. *Id.* The pathline plots trace the fluid particles and their flow patterns. Pl. 56.1 Facts, Gillette Dec. at ¶¶ 27-30. Further, Dr. Lueptow relied on velocity vector plots, which indicate the direction of the flow and the magnitude of the velocity in the plane. *Id.*

Both parties' arguments on literal infringement rest on their own proposed construction of claim 1. The court has construed claim 1 as a matter of law. Vaughan's proposed claim construction of phrases 2 and 3 is supported by the patent's plain language, specification, and prosecution history. As a result, Liquid Dynamics must demonstrate that each of the accused Vaughan systems generate the substantial helical flow under the court's claim construction. But Liquid Dynamics argues literal infringement based on its own proposed construction. Specifically, Liquid Dynamics relies on Dr. Lueptow's deposition testimony. *See* Pl. 56.1 Facts, Ex. M., at p. 186-207. For each pathline plot, Dr. Lueptow describes a flow pattern that travels outward from the nozzle, upwardly on the outer portion of the tank, inwardly in the upper portion and then a downward motion in the inner portion of the tank. *Id.* Dr. Lueptow's description of Vaughan systems' helical flow is based on Liquid Dynamic's improper construction of phrases 2

and 3. As a matter of law, an accused device cannot infringe a patent if a single limitation is not satisfied. *Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1349 (Fed. Cir. 1998). Lueptow's CFD analysis fails to raise a genuine factual issue that Vaughan's systems produce substantial helical flow. *See Multiform Desiccants, Inc. v. Medzam*, 133 F.3d 1473, 1476 (Fed. Cir. 1998) (claim construction may be dispositive of literal infringement; "upon correct claim construction it may be apparent whether the accused device is within the claims"); *Wyttenbach v. Atoma Int'l., Inc.*, 997 F. Supp. 1037, 1051 (N.D. Ill. 1998) (claim construction may resolve the infringement issue).

Similarly, Liquid Dynamics offers two CFD analysis reports of Vaughan's installations at Merced, California. Liquid Dynamics advances Dr. Lueptow's declaration that opines those reports illustrate helical flow. Pl. Rule 56.1 Facts, Lueptow Dec. at ¶ 31. But Dr. Lueptow's opinions are based on Liquid Dynamics' broad claim construction that the court has rejected. *Id.* Liquid Dynamics further asserts Dr. Gillette and Dr. Lueptow opine that Vaughan systems generate helical flow patterns based on their experiences, not solely on the CFD plots. *Id.*, Gillette Dec. at ¶16; Lueptow Dec., at ¶ 23. An expert's conclusory assertion cannot create a genuine dispute of fact. *Philips Petroleum Co. v. Hunstman Polymers Corp.,* 157 F.3d 866, 876 (Fed. Cir. 1998); *see also Wyttenbach,* 997 F. Supp. at 1046 (conclusory expert affidavits in patent cases are not persuasive). Liquid Dynamics fails to offer evidence of a constantly repeating, substantial helical pattern with the required four motion segments in accordance with the court's construction of phrases 2 and 3. As a result, Liquid Dynamics fails to raise a genuine dispute of material fact that Vaughan's systems infringe the '414 patent. Summary judgment on Liquid Dynamics' literal infringement claim must be granted.

V. Doctrine of Equivalents

In the alternative, Liquid Dynamics contends Vaughan's systems infringe the '414 patent under the doctrine of equivalents. As a preliminary matter, Vaughan contends Liquid Dynamics' complaint failed to allege an infringement claim under the doctrine of equivalents. *See* Compl. at ¶¶ 3, 7. Vaughan contends the court cannot consider the doctrine of equivalents claim. Vaughan's argument lacks merit. Rule 8(a)(2) of the Federal Rules of Civil Procedure requires a short and plain statement of an alleged claim. *Dewalt v. Carter*, 224 F.3d 607, 612 (7th Cir. 2000). A patent infringement claim encompasses two different theories of infringement: literal infringement and infringement under the doctrine of equivalents. *See Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 21 (1997). Liquid Dynamics' allegation of patent infringement under 35 U.S.C. § 271 is sufficient. Compl. at ¶ 7; *see Bennett v. Schmidt*, 153 F.3d 516, 518-19 (7th Cir. 1998) (a complaint does not need to plead a particular legal theory).

The purpose of the doctrine of equivalents is to prevent competitors from pirating the essence of an invention while narrowly avoiding the literal language of the claims. *See Laitram Corp. v. Cambridge Wire Cloth Co.*, 863 F.2d 855, 856-57 (Fed. Cir. 1988). Under the function-way-result test, the patentee must prove the accused device performs substantially the same function, in substantially the same way, to produce substantially the same result as the claimed invention. *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 608 (1950); *Alpex Computer Corp.*, 102 F.3d at 1222. The functional equivalent of every claim limitation must be present in the accused device to establish infringement. *Thomas & Betts Corp. v. Panduit Corp.*, 65 F.3d 654, 660 (7th Cir. 1995). The inquiry is objective and must be made on an element-by-element basis. *Warner-Jenkinson*, 520 U.S. at 40. The doctrine of equivalents

cannot be employed in a manner that wholly vitiates claim limitations. *Warner-Jenkinson Co.*, 520 U.S. at 29-30. The application of the doctrine of equivalents is the exception, not the rule, because it is equitable in nature. *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991).

The relevant inquiry under the doctrine of equivalents is whether differences between the accused and disclosed structures are insubstantial. *See Chiuminatta Concrete, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 1310 (Fed. Cir. 1998). Liquid Dynamics must demonstrate Vaughan systems contain equivalent flow patterns of the '414 patent. Liquid Dynamics advances Dr. Gillette's declaration that attests Vaughan uses nozzles pointed at the tank wall to create helical flow similar to the '414 patent. Def. 56.1 Facts, Gillette Dec. at ¶ 26. However, Liquid Dynamics must offer evidence of the equivalence of the flow patterns. The doctrine of equivalents requires an element by element analysis. *Warner-Jenkinson*, 520 U.S. at 40. Dr. Gillette's conclusory assertion of equivalency cannot create a genuine factual dispute. Further, the '414 patent's helical flow path is central to the operation of the invention, not an insubstantial part of its overall structure. *See Kemco Sales, Inc. v. Control Papers Co., Inc.*, 208 F.3d 1352 (Fed. Cir. 2000) (when the court determines the "way" is substantially different, there is no infringement under the doctrine of equivalents). The patent prosecution history establishes that the scope of the '414 patent was narrowed to encompass a specific type of flow pattern. Mot. for Claim Constr., Ex. C, D. The '414 patent's plain language provides for a specific flow pattern that is central to the invention. *Id.*, Ex. A. Figures 5 and 6 in the patent specification define the required helical flow path. *Id.* Liquid Dynamics' requested application of the doctrine of equivalents creates a broad range of equivalents that would effectively eliminate a claim element.

Warner-Jenkinson, 570 U.S. at 29; *Athletic Alternatives, Inc. v. Price Mfg., Inc.*, 73 F.3d 1573 (Fed. Cir. 1996) (the doctrine of equivalents must not erase structional and functional limitations of the patent's claims). Liquid Dynamics fails to offer evidence to create a genuine factual dispute about the equivalence of the flow patterns. No reasonable jury could conclude the differences between Vaughan systems flow paths and the '414 patent are insubstantial. *See Digital Biometrics*, 149 F.3d at 1349 (summary judgment is appropriate where no reasonable jury could conclude the patented invention differs insubstantially from the accused product).

Further, Liquid Dynamics contends Vaughan's systems form substantially homogeneous slurry mixtures. *See* Def. 56.1 Facts, Gillette Dec. at ¶ 26. The evidence does not create a genuine dispute of fact. The "doctrine of equivalents must be applied to individual elements of the claim, not to the invention as a whole." *Id.* Liquid Dynamics asserts the interchangeability of Vaughan's systems with the '414 patent is recognized in the mixing industry. Liquid Dynamics offers evidence that Vaughan was awarded a project in Scranton, Pennsylvania for installation of its Rotamix System. Def. 56.1 Facts, Crump Dec. at ¶ 18. The bid specification described the Vaughan Rotamix system and the Liquid Dynamics JetMix system as equals. *Id.*, Ex. BB. Nevertheless, the bid specification cannot create a material factual dispute. Under the doctrine of equivalents, the relevant inquiry is whether persons reasonably skilled in the art would know of the interchangeability of an *element* of the claim, not the invention as a whole. *Warner-Jenkinson*, 520 U.S. at 40. Consequently, Liquid Dynamics fails to create a genuine dispute of fact on its doctrine of equivalence infringement claim.

VI. Contributory and Inducement Infringement, Invalidity, and Inequitable Conduct

Liquid Dynamics asserts a claim for contributory infringement and inducement of infringement. *See* 35 U.S.C. § 271(c). It is well settled that a claim for inducement of infringement fails without evidence of direct infringement. *Met-Coil Sys. Corp. v. Korners Unlimited, Inc.*, 803 F.2d 684, 687 (Fed. Cir. 1986). Similarly, a finding of contributory infringement requires proof of direct infringement. *Standard Havens Prods., Inc. v. Gencor Indus., Inc.*, 953 F.2d 1360, 1374 (Fed. Cir. 1991). Accordingly, summary judgment must be granted on Liquid Dynamics' claim for contributory and inducement infringement.

Vaughan moves for summary judgment on its invalidity and inequitable conduct counterclaims. *See* 35 U.S.C. §§ 102(b), 103, 112. Because the court grants summary judgment on non-infringement, Vaughan's summary judgment motions on invalidity and inequitable conduct are moot. *See Spectronics Corp. v. H.B. Fuller Co., Inc.*, 940 F.2d 631, 637-38 (Fed. Cir. 1991) (declaratory actions for invalidity and unenforceability are moot when no infringement is found).

CONCLUSION

Vaughan's motion for summary judgment on non-infringement is granted. Vaughan has not infringed Liquid Dynamics' U.S. Patent No. 5,458,414. The summary judgment motions on invalidity and inequitable conduct are moot.

July 31, 2002

ENTER:

Suzanne B. Conlon
United States District Judge